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ADAPTATIONS AND MODIFICATIONS OF SELECTED PHYSICAL EDUCATION ACTIVITIES FOR BLIND CHILDREN PARTICIPATING WITH THE SIGHTED

A Qualifying Paper
Submitted to the Graduate School
in Partial Fulfillment of the Requirements
for the Degree of
Master of Science in Education
in the Department of Physical Education
for Women

by
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INTRODUCTION

There appears to be a significant increase in the number of blind children enrolled in the integrated educational programs of the public schools. Blind children enrolled in such programs participate in all class functions and follow a regular schedule of daily classes and activities with their sighted classmates.

The investigator, a physical education instructor who teaches within the framework of an integrated program of this type, was confronted with the choice of including or excluding these children from the physical education program. The investigator felt that every child, regardless of her disability, was entitled to receive the advantages derived from participation in physical education. This belief motivated the investigator to include the blind children in physical education classes in an effort to provide opportunities which would enable these children to receive the physical, social, and emotional benefits inherent in the program.

An examination of available material revealed a lack of practical information regarding the integration of blind children into physical education classes comprised of sighted children. This fact challenged the investigator to devise practical adaptations and modifications of physical education activities which would permit the blind child to actively participate with a class of sighted children.

It was the investigator's further belief that association and participation with sighted peers in physical education activities would not only provide the opportunity for each individual to develop physically, but would alos help the the blind child achieve a more satisfactory level of social and emotional integration within the prevailing culture as an adolescent and in later years as an adult.

Chapter I

THE PROBLEM AND NEED FOR THE STUDY

Statement of the Problem

The purpose of this study was to adapt and modify selected physical education activities which would enable the blind child to participate in a physical education class with sighted children and to delveop teaching aids to assist the blind child in learning these activities. It was also the purpose of the investigator to evaluate empirically the effectiveness of these adaptations, modifications, and teaching aids.

Sub-Problems

1. Develop adaptations which the blind child can employ to enable her to participate with sighted classmates.

2. Develop modifications which the sighted can employ to enable the blind child to participate with the class.

3. Develop tactual teaching aids to improve the blind child's comprehension of the activities presented.

4. Evaluate, empirically, the effectiveness of the adaptations and modifications of selected physical education activities used in this study.

Need for the Study

Figures presented by the American Printing House for the Blind indicate a definite trend towards public school education for visually handicapped children. At the time a blind child enters an integrated program she is enrolled as a member of a regular sighted class. She participates in all class functions and follows with her classmates a daily schedule of activities. It would seem natural to assume therefore, that physical education would be included in her daily program, when it is provided for her sighted classmates. Yet, the investigator has found, through personal experience and through examination of the available literature, that often the blind child is excluded from the physical education class.

The majority of sighless pupils attending public schools are excused from from exercises and given a rest period.[1] Thus,blind children are deprived of the physical education which they need and sighted children are denied an opportunity to realize the physical capabilities of blind children. The degree of acceptance handicapped individuals achieve in adult society could be enhanced by fostering favorable and realistic attitudes toward blindness and other handicaps at an early age.

In actually initiating the integrated physical education program, the individual teacher must rely chiefly on her own resources and creativity. This is due to the scarcity of information and materials regarding presentations and methods of teaching in such a class. There is only a small amount of information available concerning physical education for the blind in the segregated class and even less for the integrated situation. There is a need for more accessible and factual information on the subject.[2]

There is little, if any medical evidence to support the practice of excluding children, whose only physical disability is blindness, from the integrated physical education program. In the investigator's opinion this practice exists due to lack of information and materials on physical education activities available to the teacher of blind children.

The investigator, while working with blind children in integrated physical education classes, became acutely aware not only of the lack of material, but also of the inaccessibility of any useful information regarding the integration of these children into the regular program.

This fact stimulated the investigator to undertake a study in this area to

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1. Charles E. Buell, Recreation for the Blind, (New York, 1951), p. 35.

2. Charles E. Buell, Sports for the Blind, (Ann Arbor, 1947), p. 2.

reveal the adaptations and modifications of various physical education activities which are effective in integrating the blind children with the sighted. The investigator hopes that the material is this study will be both useful and practical for the teacher who is responsible for the physical education of blind children attending school with sighted classmates.

Delimitations

This study was delimited to three girls in School District #21 of Wheeling, Illinois.

The subjects, who were of average intelligence, were eleven to fourteen years of age and in the seventh and eighth grades.

All of the subjects were totally blind; two due to retrolental fibroplasia and one due to congentital glaucoma. The subjects were free from other apparent physical disabilities.

Definitions of Terms

Adapt--is a term used in this study to indicate what the blind child does when she performs physical skills.

Adaptation--in this study refers to action taken by the teacher to change the method of instruction of the blind child in physical skills.

Blind--is a term used in this study to indicate the subjects total lack of useful vision or light perception.

Blindness--defined by the United States federal and state governments is stated as follows:

> "Central visual acuity of 20/200 or less in the better eye, with correcting glasses or central visual acuity of more than 20/200 if there is a field defect in which the widest diameter of visual field subtends an angular distance of no greater than 20 degrees."[3]

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[3] Blindness; Some Facts and Figures, (New York, 1960), p. 1.

Integrated Class--as used in this study refers to blind children enrolled in a physical education class with sighted peers.

Modification--as used in this study refers to action taken by the teacher or sighted member of the class to change the game or activity to meet the requirements of the blind child.

Tactual--as used in this study refers to the teaching or learning of a movement or activity through the sense of feeling with the hands or body.

CHAPTER II

Related Literature

A Thorough and careful investigation of available literature has revealed a number of studies which have significance for this study. Only those studies which are most pertinent to this investigation will be reviewed.

In 1961 there was an estimated 355,000 blind persons in the United States. Of this number approximately 10% were under 21 years of age.[1] In 1962, 16,604 children in grades one through twelve were registered with the American Printing House for the Blind. Of this number 9,552 were enrolled in public schools while the remainder attended residential schools for the blind. The trend towards enrollment of blind students in the public school program has been steadily increasing in the past decade, as shown by figures compiled by the American Printing House for the Blind.

From the years 1945-1955, retrolental fibroplasia, an eye condition associated with pre-mature birth, accounted for approximately 50% of the blindness found in young children.[3] Although medical research has contributed dramatically to the prevention and detection of retrolntal fibroplasia it can not be assumed that the in incidence of blindness will be reduced appreciably in the schools. This fact is substantiated by a report from the American Foundation for the Blind which states, "...we should anticipate the same relative increase in the blind population that is is expected in the total population..."[4]

The number of pupils registered, according to grade level, with the American Printing House for the Blind in 1962 indicates that there are an

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1. New Outlook for the Blind, 40th Anniversary Edition, LV (Oct., 1961), 6.

2. American Printing House for the Blind, Ditto Material presented at the 1963 National Convention of the Council of Exceptional Children, (Philadelphia,1963)

3. Georgia Lee Abel, "The Education of Blind Children," in Wm. Cruickshank, ed., Education of Exceptional Children and Youth, (New York, 1960), p. 299.

4. Services for Blind Persons in the United States, (New York, 1960), p. 7.

increasingly larger number of students in the lower grades who will be progressing through the public schools for the next ten to twelve years.[5] This estimate does not include the number of blind children who attend schools other than the public schools.

The growth and develop,emt of an individual child requires activity. As indicated by Williams, "The only agency available for the development of the vital organs is exercise."[6] The needs of the young blind child are practically no different than those of the sighted in regard to their need for physical activity.[7]

Following a five year study to determine the effects of blindness on the development of the infant and yound child, it was found that the determining factor was the failure of adults to fully provide for the blind child. "...blindness in and of itself is not the determining factor in the child's develop,emt. Rather, failure in the part of adults to know what to expect of a blind child or how to encourage his optimal develop,emt creates the problem."[8]

Physical educators have long proclaimed the importance of providing a physical education program which will contribute to the optimal development of every child. One of the aims of physical education as stated by Williams is "...to provide skilled leadership and adequate facilities which will afford an opportunity for the individual or group to act in situations which are physically wholesome, mentally stimulating and satisfying,and socially sound."[9]

Too often the blind child's physical develop,emt is hampered during his early years of life by over protective parents. According to Buell, "Over protected visually handicapped boys and girls perform far below normal in such common activities as running, throwing, and jumping."[10] Heim maintains that; "Parents of blind children often refuse them the opportunity to participate in normal physical activity for fear of accident and injury. Naturally, this prevention of normal physical activity hinders the children's physical development."[11]

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[5] Abel, p. 300

[6] Jesse Feiring Williams, The Principles of Physical Education, 6th edition, (Philadelphia, 1954), p. 250.

[7] Berthold Lowenfeld, Our Blind Children, (Springfield, 1956), p. 25.

[8] Miriam Norris, "What Affects Blind Children's Development," Children, III (July, 1956), 127.

[9] Williams, p. 242.

Thus, one of the responsibilities of the physical educator is to provide education and direction which will attempt to overcome physical retardation, and lead the child towards a richer more satisfying development. According to Taylor, "Physical education with its imphasis upon sports and play activities, seeks to aid blind and partially sighted students to make the most of their remaining abilities, thereby leading to a richer, fuller, happier, more complete life for them."[12] Taylor also emphasizes the fact that, "A physical disability should not deprive an individual of the values that can be received from physical activities which are adapted to his needs and interests."[13]

In discussing the needs of blind children, Hunt contributes the fact that, "The needs of the blind are not different from those of the seeing, but owing to experiences connected with blindness their needs for social and physical experiences are accentuated."[14] In further discussing blindness, Hunt[15] indicates some of the feelings possessed by blind individuals. Physical tension is often high due to the inability to perform specific activities. Insecurity due to

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10. Charles E. Buell, Recreation for the Blind, (New York, 1951), p. 9.

11. John Joseph Heim, "Physically They See," Journal of Health, Physical Education and Recreation, XXIX (May, 1958), 35-36

12. Wiley W. Taylor, "Those Who Can't See Need Physical Education Most," Journal of Health, Physical Education and Recreation, XXIII (May, 1952), 20-21

13. Ibid,, p. 20.

14. Valerie Hunt, Recreation for the Handicapped, (New York, 1955), p. 78.

15. Ibid.

fear of moving about in space is often present. Often the blind do not run or jump with ease.

The physical education class provides unique opportunities for the adjustment of psychological and social problems which may be present in the blind child. Daniels states: "Problems of psychological and social adjustment will be eased if optimum physical development is achieved."16 Self confidence must often be instilled within blind children to develop thier own sense of personal worth. This in turn will help them to overcome critical periods in their life.17

As pointed out by Mathews, Kruse, and Shaw,18 the physical education program may afford the only opportunity for safe, vigrous activity in an otherwise quiet daily living pattern for the blind child. According to Buell,19 all children, including blind children want and need to express thier play impulses. Play teaches blind children alertness, courage, and skill in addition to helping them overcome fear and helplessness.

Authorities in the field of education for the blind generally feel that integration of the blind with the sighted is most desirable. In disculling the worth of such a program in regard to the emotional stablility of the child, Bourgeault says that: "Placing the child in the regular classroom permits identification with his sighted peers and encourages healthy and relistic ego development"20

Depriving the blind child, in the public school program, of physical education may have a lasting detremental affect upon the child. Daniels,21 in

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16. Arthur S. Daniels, Adapted Pysical Education, (New York, 1954), p. 159.

17. Berthold Lowenfeld, "The Blind Adolescent in a Seeing World," Exceptional Children, XXV (March, 1959), 310.

18. Donald K. Mathews, Robert Kruse, Virginia Shaw, The Science of Physical Education for Handicapped Children, (New York, 1962), p. 45.

19. Charles E. Buell, Sports for the Blind, (Ann Arbor, 1947), p. 85.

20. Stanley Bourgeault, "A Discussion of the Integrated or Resource Plan," New Outlook for the Blind, LIV (May, 1960), 154.

21. Daniels, p. 495.

discussing blind children emphasizes the need for them to engage in vigorous activity with others. Failure to do so encourages them to withdraw from the society of their contemporaries.

In Addition to the physical benefits derived from participation in the physical education program the blind child will also attain skills which will enable him to be well acquainted in a sports situation as either a spectator or as a member of a conversational group.22 However, as Buell23 points out, an individual derives more benefit from activities as a participant than as a spectator. If the blind child is not taught to play in school the likelihood is that he will never learn to play and thereby not receive the physical, emotional or social values inherent in the program.

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22. Ibid., p.20

23. Buell, Recreation for the Blind, p. 13.

CHAPTER III

PROCEDURE IN COLLECTING AND EVALUATING DATA

General Statement of Procedure

The investigator observed the ability of the subjects to perform various motor skills involved in physical education activities. When difficulty in performing a motor skill was encountered by the blind child, adaptations were devised by the investigator to permit the child to participate. When the sighted classmates encountered difficulty in including the blind child in an activity, modifications in the game situations were devised by the investigator to enable the blind child to participate.

The adaptations were then taught to the blind child and the modifications taught to the sighted classmates and the blind child.

Tactual teaching aids such as; field and court diagram board, scoreboard, posture manikin, and indoor starting block were developed by the investigator to aid the blind child in comprehending the presentation of activities and to aid in the integration of the child into the various activities of the class.

Finally, the effectiveness of the adaptations, modifications and teaching aids was evaluated through observation of the performance level of the subjects in various activities, based on generally accepted standards of performance for the stage of growth and development of each child.

Selection of Subjects

The subjects used in this study were three girls of junior high school age, Each subject was enrolled, during her seventh and eighth grade year of school, in an integrated physical education class.

Instruction for one subject was limited to two days each week. Two subjects received instruction for five days each week. The entire study was conducted over a period of four years.

Reliability of Investigator

The investigator received training in orientation and mobility for blind children at the University of Minnesota. Additional courses and workshops have increased the investigator's knowledge of the methods and procedures used in educating the blind.

The investigator experienced, prior to undertaing this study, teaching physical education activities to blind children in the public schools of Wheeling, Illinois. By working with blind boys and girls in grades one through eight the investigator was able to stablize her manner of approaching the teaching of blind children.

General Adaptations of Teaching Methods

Certain teaching techniques, basic to the attainment of desirable outcomes were used when presenting any physical education activity to the subject.

Of primary importance was the attitude of the investigator towards the subject and towards blindness as a disability. A positive approach was taken.

The investigator attempted to challenge the subject to a high level of achievement and provide the climate for a feeling of confidence in the ability of the subject to perform physical skills. The investigator established good rapport before she initiated positive action. Emphasis was placed on safety percautions to insure that there was no danger of injury to any of the members of the class regardless of a disability.

In this study, new material was always persented to the subject in clear, exact, and definite terms. Since the subject depended primarly on her auditory skills in learning new movement patterns, the vocablary used in describing a new situation or movement was descriptive and accurate. For example, when directing the blind child to put her arm over her head, the investigator was specific and said; "Put your arms above your head, with the palms facing each other." If directions were not specific it was that the subject placed her arms above her head in any number of different positions and the palms were not facing correctly.

However, it was not necessary to reduce the explanation to elementary terms nor to use special voice inflection since the subject had no intellectual or hearing difficulties.

To assist the subject in her comprehension of body position and body action it was often necessary for her to experience the position or action tactually. The investigator or sighted classmate assumed the position or performed the action while the subject observed with her hands the movement of the various segments of the body. For example, teaching the foot position used in rope climbing was facilitated by utilizing this technique. The subject was then able to assume the position or perform the action with the investigator making tactual and verbal corrections.

It was not necessary for all corrections to be made by the investigator. Often a nearby sighted classmate was able to easily handle the situation. When the assistance of the investigator was needed she helped the subject while the rest of the class was repeating the action. The investigator talked with her hands to the subject while speaking verbally to the sighted.

All written information, rules, and tests distrubuted to the class were brailled in advance for the subject. She was then able to study the rules and information at her convenience as the sighted children did and she was able to take written tests when they were administered to the sighted.

Specific Adaptations of Teaching Methods and Modifications of Selected Physical Education Activities

The extent to which the subject was permitted to participate in each physical education activity was dependent upon her physical skill, the nature of the activity, and the effectiveness of the adaptation and/or modification of that activity.

Although three subjects were used in this study, only one subject was enrolled in each sighted class.

Sighted classmates were used as assistants whenever they were needed to implement the adaptations and modifications.

The following physical education activities were adapted and modified for the subject.

Basketball

The fundamental skills of basketball were adapted for the subject to enable her to participate with the class of sighted children. Scoring was also modified to enable the subject to take an active part in the actual game of basketball. The following skills were taught to the entire class:

1. Passing and Catching

The underhand pass, chest pass, overhead pass and bounce pass were the basic passes taught to the entire class. The sighted classmates were instructed to call or talk to the subject when she was passing the ball, to help her determine direction.

When the subject had difficulty propelling the ball or directing the ball, added assistance was necessary. Tactual assistance was given by the investigator who stood closely behind the subject and guided her arms through the correct movement pattern of throwing.

Emphasis was placed on bending the knees, stepping forward with the opposite leg, and putting more power into the throw.

To increase the height of the ball thrown by the subject, a classmate stood between the subject and the receiver. The classmate extended her arms above her head and snapped her fingers to indicate the minimum height the ball had to travel to clear that point. The subject was instructed to throw the ball over the snapping fingers thereby developing the kinesthetic awareness of the arm motion needed to cause the ball to travel the prescribed distance.

Classmates were instructed to use a bounce pass when throwing to the subject. The sound of the bounce enabled the subject to judge the speed and direction the ball was traveling.

2. Dribbling

The subject was told to bounce the ball in place with both hands. As she gained skill she was instructed to bounce the ball with one hand and then to move forward one step and one bounce at a time. The subject was cautioned to take short steps and to push the ball downward rather than pushing it too far forward.

3. Shooting

The movement patterns for the chest shot, one hand push shot, and underhand shot were taught to the subject by means of verbal instruction and tactual assistance in the same manner used in throwing. Through experience the subject judged the height of the basket. A classmate standing under the basket called or talked to the subject to help her determine the direction and distance of the basket.

4. Guarding

The correct guarding stance was taught simultaneously to both the blind and the sighted. Mass drills were done with the entire class assuming the guarding stance and moving at the investigator's command, either to the left, right, forward, or back. The subject was allowed a wider space in which to move.

5. Starting and Stopping

Emphasis was placed on quick starts and stops. Simple drills, such as running and stopping when a whistle was blown, were used to develop these abilities. The subject was assigned a wide space in which to run and was instructed to use audio clues to keep from running into her classmates.

The investigator made certain the subject did not endanger herself by running into the wall. This was done by blowing the whistle before the subject came within approximately six to ten feet of the wall.

6. Game Participation

The players positions and court markings were illustrated to the class by use of the blackboard. A suitable braille board (See appendix p. 56) was made for the subject. Raised wood lines on the board indicated the markings on the floor. Different shaped wood blocks were used to differentiate between the two teams.

The subject "watched" the braille board as the various players and positions were discussed by the investigator. A classmate showed the subject which player or marking was being explained and then the subject observed the relationship of that piece of wood to the other markings on the board.

To improve the subject's concept of the game objective, she played with someone in each position during the early teaching of the game. After the class had learned the game and was involved in competition the subject assumed the duties of scorekeeper.

7. Scoring

The technique of scoring was taught to the entire class.While the sighted students had printed score sheets, the subject used a braille scoreboard. (See appendix p. 54) A suitable scoreboard was made on fiber board using various types of tacks to signify the different information, such as field goals, free throws and fouls, This scoreboard was modified to include the most pertinent information used on an official scoresheet.

It was necessary for the subject to have a thorough knowledge of the rules and to be alert and attentive in order to keep an accurate score.

Body Mechanics and Posture Education

The entire class was given an introduction to body mechanics and posture education in an effort to lay a basis for the understanding of all physical action based on mechanical and scientific principles of movement.

The investigator demonstrated information concerning the position of the body by using the subject as a model. In this way the subject was able to understand the discussion.

A rope model of a man was made, (See appendix p. 60) indicating the five bony landmark areas of the body as described in the lateral position, to aid the subject in her comprehension of the proper position of the body segments.

Calisthenics

Descriptive and accurate vocabulary was used to describe the various positions and actions of the different calisthenic exercises presented in this study. Since the subject was neither able to watch the demonstration given by the investigator, nor able to gather clues from her classmate's movements, she had to rely on audio clues before making her judgment of how to perform the movement. The investigator expanded her verbal commands for more thorough clarification in the following ways:

1. Hands over the head.	1. Hands over the head, arms straight, palms facing front.
2. Arms out to the side.	2. Arms out to the side, shoulder level, palms down.
3. Hands on shoulders.	3. Hands on shoulders, left on left. Elbows shoulder level pointing forward.
4. Arms across the chest.	4. Arms across the chest, hands on opposite shoulders, elbows down.
5. a. Lie down on the floor with arms out to side.	5. a. Lie down on the floor on your back, with arms out to the side shoulder level, palms up.
b. Touch your right toe to your opposite hand.	b. Touch your right toe to your opposite hand by lifting your right leg from the hip, knee straight. Let the inside of your foot face the floor as it moves upward.

If the subject was unable to interpret how she was to move, a nearby classmate assisted her by manipulating the subject's limbs in the correct movement pattern. If confusion still existed on the part of the subject, the investigator assisted her. During this procedure the sighted children performed repetitions of the same exercises.

Field Hockey

A good deal of vigorous running, quick turns and moves in opposite directions are skills required to play field hockey. In addition to the above basic skills, the following skills are employed and were adapted and modified for the subject:

1. Stick Position

The subject was taught to recognize the various parts (i.e., handle, toe, face and curved side of the hockey stick through tactual observation as they were described by the investigator. The subject was taught the correct position of the hands on the stick through verbal directions given to the entire class. It was necessary for the instructor to give verbal directions which insluded orientation clues such as; left and right hands, palm facings, flat and curved side of stick facings, and handle directions. To learn the swing motion of the stick the investigator demonstrated to the class the movement of the arms by operating the blind child's arms with the correct motion. This procedure allowed the material to be presented to the sighted and to the blind at the same time.

2. Dribble

To dribble the ball a series of short taps is employed. When the sighted child dribbles the ball in such a manner that it does not travel in a straight line, she is able to maintain control, because she can see where it has traveled. The subject had to learn to tap the ball solidly with the face of the stick so that it would travel in a relatively straight line. When the subject lost an awaremess of the location of the ball, a quick search with the stick was made to locate it. The search was done by using the stick to make small circular movements which gradually got larger until the ball was found. This is the pattern customarily employed by blind persons when retrieving an object from the floor or ground. When it was obvious to the sighted classmates that the ball was too far away to make this method impractical, the ball was located by them.

3. Passing and Receiving

There was little problem encountered when the blind child passed the ball. Before the subject hit the ball a sound was made by her partner to give direction.

Through kinesthenic awareness, the amount of force needed to carry the ball a prescribed distance was judged. When the ball was passed to the subject, it was directed to her stick. When necessary the subject was told when to swing enabling her to return the ball forcefully.

4. Various Strokes

The various strokes were taught to the subject and the sighted child in the same manner. The hand position and stick movement was explained by the investigator. Repeated trials were executed until a smooth stroke was achieved.

5. Bullies and Corners

When the subject executed a bully she located the ball with her hand or stick, thereby keeping her stick in contact with the ball until she had her body in proper position. On the command go or when the whistle was blown the bully was taken in the same manner as done by the sighted players.

The only assistance needed by the subject in taking the long and short corners was for someone to locate the proper position for her on the end line and to give her direction when it was time to hit the ball.

6. Player Positions and Field Markings

The player's positions on the field and the field markings were explained to the class and drawn on a blackboard. A suitable braille board was made for the subject. (See appendix p. 56) Raised wood lines indicated the markings. Different shaped wood blocks were used to differentiate the two teams of players. The subject "watched" her braille board while the sighted children watched the blackboard. During the presentation of this material a classmate sitting close by placed the subject's hands on the particular line or player on the braille board. The subject in turn observed with her hands the relationship of that object to the rest of the board.

7. Game Participation

The subject had some experience playing in one of the forward line positions and in each of the backfield lines. In this way she experienced through actual participation the amount of running, turning, and play involved within each line. However, for actual participation and physical exertion on the part of the subject a position of either wing or inner was most favorable. A responsible sighted classmate played the position not taken by the subject, either the wing or inner. Whenever the sighted player moved or changed direction she called the subject by name in order for her to follow. The subject traveled with her, unaided, up and down the field. The subject also used her ears. When she heard the play of the ball in her immediate territory she put her stick down and attempted to contact the ball.

Fitness Tests

The subject had no problem performing any fitness test done in a given place on the floor. Some modifications were necessary when movements over a prescribed course were required. For example, in the shuttle run test used in the AAHPER Fitness Tests[1] two assistants were necessary. The subject and assistant A stood at the starting line, while assistant B stood with her feet together on a line thirty feet away. Assistant B placed a block of wood on top of her feet. On the command "go", assistant B called the subject to her and she ran to the assistant. As the subject reached the assistant, she stooped down and picked up the block of wood. Immediately, assistant A on the starting line, called her back. The subject ran to that assistant and placed the block of wood on the floor. Assistant B then called the subject again and the procedure was repeated, picking up the second block of wood.

Adaptations were made to enable the subject to take her turn at counting executions made by her partner on various fitness tests used in this study. Examples of these adaptations follow:

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[1] American Association of Health, Physical Education and Recreation, AAHPER Youth Fitness Test Manual, (Washington D.C., 1958), p. 9.

1. Sit ups (knees up)[2]	1. The performers feet were held by sitting on them. The palms were placed over the knee caps with the fingers pointing down. As the performer sat up to touch the knees with the elbows, the elbows touched the subject's hands enabling her to count the repetitions.
2. Push ups[3]	2. The subject squated beside the performer. She placed one hand on the floor under the performers chest. The other hand was placed lightly on the performers arm at the elbow joint. As the performer lowered her body the chest touched the hand on the floor. As the performer pushed up the subject was able to determine, by the hand on the elbow, whether complete push ups were being done.
3. Wquat thrusts[4]	3. The subject squated beside the performer. She placed her palms on the floor near the point where the performers feet landed. As the feet returned to the squat position on count three, a vibration was felt by the hands. In addition audio clues were given by the feet hitting the floor.

The investigator was responsible for determining if a performer was doing an exercise incorrectly. This eliminated the necessity of having the sighted child or the subject determine if a performer was receiving extra lift from a wing like motion of the arms in situps, dropping the hips in push ups, or not straightening the knees in squat thrusts.

Gymnastics

Participation in gymnastics was of an individual nature therefore, the subject's progress on any piece of equipment did not hamper the activity of the sighted child. The subject was not permitted on any mat unless she herself was performing. This placed the subject a safe distance from all pieces of apparatus.

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[2] M. Gladys Scott and Esther French, Evaluation in Physical Education, (St. Louis 1950), p. 173.

[3] Donald K. Mathews, Measurement in Physical Education, (Philadelphia, 1958), p. 107.

[4] Ibid.

The subject tactually observed each piece of equipment before it was introduced to the class. She examined the various parts and the movement of the apparatus in addition to the mats surrounding the equipment.

The same method of instruction was used for each stunt on each piece of equipment. This method consisted of three steps:

1. A verbal description of the stunt to be performed was given to the entire class. The stunt was performed by either the investigator or a sighted student.

2. The subject observed tactually the relative position of the various body segments and their movements during the execution of the stunt.

3. The dubject performed the stunt as she felt it should be done and the investigator made the necessary corrections.

A sufficient number of spotters were present at all times to insure the safety of the subject. Elementary stunts were taught by the investigator to the subject on the buck, stall bars, parallel bars, and rings. In addition, she was taught to walk across the balance beam and to climb the ropes.

Locomotor Skills

Before teaching any locomotor skill the investigator assured the subject that ample room existed for her to move about freely without fear of being injured. Prior to having to having sighted classmates call from different points on the floor to indicate that there was no obstruction between them and the subject, the investigator walked the subject around the area to point out the relative position of walls, doors, and steps.

During the teaching of all locomotor skills, sighted classmates stood approximately ten feet from the walls at the far end of the gymnasium and called to the subject to help her keep her sense of direction. The classmates stood away from the walls so that if the subject did run too far or stray to the sides she did not collide with the wall or other objects.

The adaptations and modifications of running, hopping, skipping, and jumping were taught to the subject as described below.

1. Running

The subject was instructed to lift her feet off the floor and to reach forward with each step. In order to teach the arm motion used in running, the investigator stood in front of the subject and moved the subject's arms in a forward and backward direction. The investigator emphasized the importance of relaxing the entire body while running.

2. Hopping

To demonstrate hopping to the subject, the investigator had the subject stand behind a classmate. The subject placed her hands on the classmate's shoulders. The classmate hopped allowing the subject to feel the vigorous upward movement of the body. The subject then duplicated the movement and kept in step with her partner.

3. Skipping

The subject was taught the basic movement of skipping; a step and a hop taken on each foot. This movement was practiced slowly until it was done correctly. The subject linked arms with two classmates who moved forward skipping. Thus, the subject realized the faster rhythm and increased the speed of her step-hop until she was able to skip alone.

4. Jumping

To gain an understanding of the body motion during jumping, the subject stood beside a classmate and placed her hand on the classmate's shoulder. As the classmate jumped in place the subject felt the downward and upward movement of the body. As the classmate jumped forward the subject felt the person being pushed forward by the jump. The subject jumped with her classmate and then performed the movement alone.

Softball

The game of softball was modified to permit the subject to take an active part with the class. The following fundamental skills were adapted and taught to the subject at the same time they were being taught to the subject.

1. Throwing and Catching

The subject was taught to throw overhand with tactual assistance. The investigator placed the subject's hand on the shoulder of a classmate while that person threw the ball. This enabled the subject to feel the motion made at the shoulder joint when a throw was executed. The investigator then stood behind the subject and with the subject holding the ball, the investigator guided the subject's arm through the correct movement pattern. At the same time emphasis was placed on the correct leg action. In order to do this the investigator pushed forward the subject's foot as she threw the ball.

The subject then attempted to throw alone and corrections were made. To prevent the ball from being released too late, the investigator stood about three feet in front of the subject with arm extended upward and snapped her fingers. The subject was instructed to throw the ball towards the sound. Where indicated, the subject was shown tactually how to flick the ball forward with the wrist and fingers.

Distance was gained by having a partner call to the subject. The subject in turn was instructed to "throw harder" until the ball traveled the prescribed distance.

Catching was done by first rolling the ball to the subject. She listened for the ball and located it. In order to catch a ball which was thrown, the subject was instructed to cup her hands and the sighted child was told to throw the ball so that it would land in the cupped hands.

2. Batting

The correct batting stance and swing were taught to the subject through verbal direction and correction. When necessary the investigator made tactual corrections.

When the subject did not swing the bat with extended arms the investigator stood in front of the child and pulled the bat forward so that the subject's arms were extended. The subject was instructed to swing the bat as if to hit the investigator standing in front of her. To develop a more powerful swing the investigator placed her hand on the bat to offer resistance while the subject swung.

3. Pitching

The subject was taught to pitch underhand. In order for the subject to determine the amount of force needed to cause the ball to travel a prescribed distance the subject was instructed to take several softballs and practice throwing them against the wall. The sound of the ball contacting the wall was used by the subject to judge the relative force of her throw.

To achieve controlled pitching the subject was informed each time she released the ball whether it was too high, too low or correct. The batter or the catcher called to the subject to help her direct the ball to the strike zone.

4. Game Participation

The game was modified to permit the subject to participate with her team both in the field and at bat. The subject was allowed six strikes as opposed to the regulation three when batting. As the ball was pitched to the subject, either the pitcher or a teammate of the subject called "swing" at the appropriate time. The pitcher was instructed to pitch the ball in the area of the subject's swing. If it was too difficult to contact the ball a volleyball was substituted for the softball.

When the ball was hit the subject ran towards first base where a teammate was calling to her. To put her out, the ball had to be thrown by the fielder, and then back to the first baseman before the subject reached the base. She ran with a teammate around the remaining bases.

When the subject's team was in the field she usually performed the pitching duties. If on any day the subject's pitching was not consistently accurate she only pitched three pitches at a time and then a sighted pitcher pitched the next three.

Track and Field

Track and field activities were presented to the entire class. The subject participated in each event within the range of her capabilities. Each event presented to the class was adapted for the subject to allow her to participate with the class. Hurdling was the only even which did not allow full participation by the subject. Although the subject did not participate in hurdling, she assumed the basic hurdling position and performed the exercises and lead up instruction with the class.

The following adaptations and modifications of track and field activities were taught to the subject.

1. Starting Blocks and Running

The use of starting blocks was taught in the gymnasium before the class was taken outside. The sighted students were given several 2x4 pieces of wood of various lengths from which they selected two that fit their foot placement. These pieces of wood were placed against the wall to avoid slipping and used in the same manner as regulation blocks were used.

The investigator after determining the correct placement of the feet for the subject, constructed a permanent block of this type (See appendix p. 59) to prevent the blocks from moving sideways.

The manner of getting into the blocks and pushing out of the blocks was described to the blind child in the same manner and at the same time the instruction was presented to the sighted. The subject used her hands to locate the block and then proceeded to take the proper position. When the class was told to come out of the blocks the subject was told to keep her head up, pull with her arms, and run vigorously to avoid falling.

9 When the class was taken outside to use the regulation blocks the subject was shown tactually how to adjust the block to fit her foot placement.

The subject was assigned the outside lane when running dashes. For short races a classmate stood beyond the finish line and called to the blind child. In the longer races where this was impractical, a sighted classmate ran ahead of the subject calling her name.

In endurance running the subject ran beside a sighted classmate. The sighted child used her voice as an audio-orientation clue to enable the subject to keep her position on the track without touching her sighted partner.

2. Pursuit Relays

The subject was the second runner on the relay team. Running was done by grasping the elbow of a sighted classmate who guided the subject around the track.

The baton hand-off was modified by having a sighted classmate stand about three feet in front of and to the side of the subject. The subject assumed the normal receiving position and received the baton in her right hand. She immediately switched the baton to her left hand while at the same time reaching for the elbow of her sighted assistant with the right hand. The subject then continued to run with the assistant around the track until it was time to pass the baton to runner number three.

3. High Jumping

The subject performed a standing high jump instead of the running high jump. The scissors jump was employed. The investigator manipulated the subject's arms in a scissors like motion illustrating the leg action necessary in the jump. The subject was then told to jump on one foot, kicking the opposite foot into the air, keeping the knee straight. Next, the subject jumped into the air using the scissors movement. She then jumped over the cross bar starting at a very low height.

4. Broad Jumping and Hop, Step, Jump

The subject was instructed to locate the center of the edge of the mat or pit before jumping. She did this by estimating with her hands or feet, equal distance on either side of her body to the side of the mat or pit. Thus, if she jumped on an angle she would still land on the mat or sand. The subject was instructed to perform the standing broad jump in the same way done by the sighted.

Two classmates assisted the subject in performing the running broad jump. One assistant stood at the far end of the pit. The second assistant ran beside the subject during her approach to the take-off board. The assistant at the end of the pit called to the subject which helped her maintain a straight line of running. As the assistant running next to the subject approached the take-off board she indicated the last three steps by saying: "Ready--Now--Jump!" It did not count against the subject if she took-off beyond the take-off board.

The coordination of the hop, step, jump was taught to the subject by having her walk through the progression. She was then given ample room to practice where loss of direction was not a dangerous factor. After she was able to coordinate the movements correctly, she approached the sand pit with a classmate in the same manner used in the running broad jump. The assistant, indicating the last three steps before the take-off said: "Ready--Now--Hop!"

5. Shot Put

The investigator stood closely behind the subject and guided her body through the correct movement pattern for putting the shot. Once this movement pattern was established the subject practiced her puts with her sighted classmates. No other adaptation was necessary.

Trampoline

Before the subject mounted the trampoline, she was oriented to the frame, legs, cables, and padding. The investigator removed three cables from the center of one side of the trampoline which allowed her to stand inside and work more easily with the subject on the trampoline. After the subject mounted the trampoline she observed the relationship of the bed, cables, frame, and the padding covering the frame and cables. Before jumping, the subject was instructed to use the voice of the investigator as a guide for locating the center of the trampoline.

The subject was told to jump on the trampoline until she was able to control her bounce. The investigator used her voice as an auditory aid to help the subject remain in the center of the trampoline.

The following elementary stunts and combinations of the same were taught to the subject.

1. Seat Drop

After explaining the seat drop and showing the subject the landing position, the investigator stood behind the subject on the trampoline. The investigator then jumped with the subject and told her when to lift the legs and hips before the next seat drop was performed.together. The subject then performed the seat drop alone.

2. Knee Drop

The subject began this stunt in the knee drop position on the bed of the trampoline. She was instructed to bounce in this position until she was able to stand on her feet. Following this accomplishment the subject performed the knee drop from the air. Emphasis was placed on keeping the head up to prevent falling forward.

3. Front Drop

The subject was told to lie face down on the trampoline in order to experience the landing position of the front drop. The subject was instructed to begin from a hands and knees position. The subject was then told to push her legs back and spread her arms, landing in the front drop. The investigator then had the subject progress to dropping from the standing position.

To dismount from the trampoline the subject was told to walk to the edge of the bed and feel for the canvas pads with her foot. When reaching the canvas she was instructed to bend down, turn and back off to the floor.

CHAPTER IV

RESULTS OF THE STUDY

The investigator observed empirically the degree of skill with which each subject performed physical activities. Although each of the three subjects displayed individual differences, the quality of their physical performance was essentially the same, apparently due to blindness.

Results obtained from the adaptations, modifications, and tactual teaching aids used in this study were as follows.

Basketball

The subject was able to pass the basketball using any of the fundamental passes. No problem was encountered in catching the basketball when a bounce pass was used.

Although the subject could not dribble for an extended length of time, she was able to dribble across the floor in a shuttle drill formation. A common fault was that of pushing the ball forward for the dribble and then not moving forward fast enough for the next impetus.

The investigator found the subject as accurate in shooting baskets as many of the average and below average sighted students.

The subject was not able to guard the ball when guarding drills were done with the offensive players moving. However, if the offensive players remained in a stationary position the subject was able to occasionally intercept the ball.

At the investigators direction the subject was able to make quick starts and stops.

Due to the fast moving nature of the game of basketball, the subject could not orient herself to the changing game situations fast enough to be at all effective. Therefore, she participated in pre-game warm ups and drills and fulfilled the position of scorekeeper during the game.

The braille scoreboard contained spaces for most of the information required on an official scoresheet. The investigator observed that the scoreboard presented a challenge to the subject. The investigator found that the scoring was more accurate when the subject was made responsible for the scoring of one team rather than for both teams.

The braille diagram board used in basketball enabled the subject to gain a good concept of the positions of the players and court markings. The subject's use of the board definitely contributed to her understanding of the game situation and helped her to keep a more accurate score.

Body Mechanics and Posture Education

Instruction for this unit was primarily verbal and the subject exhibited little problem in understanding the material. The rope model aided the subject in understanding the effect of each body segment upon the total body. By placing the rope in a position of poor posture, the subject could feel the "zigzag" position. She then compared this to the straight balanced position. It was found that the subject could comprehend this information and a positive change was observed in her body alignment.

Calisthenics

Utilizing the adaptations set forth in the study the investigator found the subject had no difficulty performing any calisthenic exercise with her class.

Field Hockey

The subject was able to handle her stick correctly and to dribble the ball in a shuttle formation. With a good stroke and a precise command to swing, given by a classmate, the subject was able to accurately pass and receive the ball. The elementary strokes were mastered by the subject.

The investigator found that the subject won the bully as often as most of her classmates. She was always able to take a corner effectively.

Use of the braille board enabled the subject to comprehend the game and to understand her relative position on the field when she was playing, Although the subject played in the game, she contributed little positive action to the play. However, neither did she appear to influence the game negatively.

Fitness Tests

Utilizing the adaptations and modifications set forth in the study the investigator found the subject could perform various fitness tests. She could also count without difficulty the number of repetitions performed by her partner.

Gymnastics

Gymnastics was one of the easiest activities in which to integrate the subject. Progress in the gymnastic activities was based on individual achievement. The investigator found the subject able to perform elementary stunts on the ropes, rings, parallel bars, and stall bars, equally as well as the average and above average sighted child. She performed the more advanced stunts as well as the below average members of the class. Performance on the buck was equal to that of the average or below average sighted child. In addition, she was able to walk across the balance beam.

Locomotor Skills

The investigator found that when the subject was presented with the opportunity to run in an area free of danger, she moved forward without hesitation. No problems were encountered in performing these basic locomotor skills.

Softball

Throwing and catching the ball utilizing the adaptations set forth in this study was performed successfully by the subject. If correct wrist and finger action was not used the ball would travel straight upward. The subject developed a kinesthetic awareness of the motion needed to cause the ball to travel the prescribed distance.

The subject was as accurate at pitching as many of her classmates. The modification of the game allowed the subject to contribute positively to the play. The sighted child needed experience to determine the exact moment to call "swing" to the subject in order for the subject to swing and connect with the ball.

Track and Field

The permanence of the indoor starting block was valuable because, excessive time was not used to adjust the pieces of wood. Before this block was constructed the subject spent time spacing the individual pieces of wood. Then when she backed into them, if she was a little off center the wood pieces separated and lost their spacing. The entire procedure then had to be repeated.

The subject after experiencing a few falls, while coming out of the blocks, understood the importance of pulling with her arms and running vigorously. The subject could run as fast as many members of the class, but in a race she usually came in last due to her inability to run in a straight line without a tactual guide. Frequently however, during a relay when the subject was running with an assistant, her team would not finish in last place.

The subject did not high jump very high. Sufficient time was not allowed for her to develop skill in kicking her feet up in front of her body.

The subject was able to broad jump as well as her below average classmates and she learned the coordination of the hop, step, jump better than many of the sighted.

A lack of power was the only problem encountered in shot putting. The coordination of the movements leading up to the put were done slowly and accurately by the subject.

Trampoline

The subject's bounce was not controlled when she first began jumping on the trampoline. However, her lack of control was no greater than that of her sighted classmates. Once the subject could control her bounce she did not always jump on the exact center of the trampoline. Since it took extra time for the subject to locate the center of the bed, the investigator did not insist that she land on the exact center as long as there was ample room between the subject and the cables.

The subject's performance of all of the elementary stunts on the trampoline was equal to that of the sighted members of the class.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The problem was to adapt and modify selected physical education activities for the blind child participating in a class with sighted children. Adaptations and modifications of selected physical education activities were devised and taught to the blind child. Tactual teaching aids were developed to aid the blind child in comprehending and performing these activities.

The three subjects used in this study were girls of average intelligence, ages eleven to fourteen, in the seventh and eighth grade, and totally blind. Only one subject was enrolled in each sighted class.

Adaptations and/or modifications were developed and taught to the subject and her sighted classmates in basketball, body mechanics, calisthenics, field hockey, fitness testing, gymnastics, locomotor skills, softball, track and field, and trampolining. In addition, the following tactual teaching aids were developed: Braille diagram board, basketball scoreboard, indoor starting block, and rope posture manikin.

The investigator found that through the use of the adaptations and/or modificatio of the activities and the tactual teaching aids the subject was able to participate successfully to some degree in each of the selected activities. In body mechanics, calisthenics, fitness testing, gymnastics, locomotor skills, some track and field events, and trampolining no modification was made in the performance of the activity, but adaptations in the method of presentation by the investigator were made.

Modification of the activity was necessary in field hockey, softball, and some track and field events in order to enable the subject to actively participate in the activities. No adaptation or modification of basketball permitted the subject to actively participate in the game. However, she was able to take part in all lead-up activities and able to keep score accurately.

The results of this study indicate that the adaptations and modifications which were devised for the physical education activities used in this study did permit the blind child to actively participate in a physical education class with sighted children.

Conclusions:

On the basis of the results obtained from the study the following conclusions have been reached by the investigator:

1. Effective adaptations and modifications can be devised which will permit a blind child to participate actively in a class with sighted children.

2. Effective tactual teaching aids can be developed which will aid a blind child in comprehending certain physical education activities.

3. Physical skills, taught in physical education; such as learning to start and stop quickly are applicable to a blind child's every day life activities and the knowldge of these skills can be acquired by the child.

4. Blind children in integrated physical education classes do not require an excessive amount of the instructor's individual attention.

5. Blind children participating with the sighted do not significantly reduce the amount of participation done by the sighted.

6. The necessary opportunities are provided in an integrated physical education class for the blind child to develop strength, endurance, agility, and coordination.

7. The incidence of falls, bumps, and bruises are incurred by the blind child in no greater amount than by the sighted children.

8. The attainment of a satisfactory level of performance of physical skills by the blind child will be facilitated if the instructor gains the confidence of the

child by assuring her of her safety.

9. Integrated physical education activities contribute to the development of social skills which enable the blind child to take an active part in extra-curricular sport activities as a spectator or as a member of a conversational group.

10. Sighted children enrolled in an integrated physical education class are provided with an opportunity to achieve a realistic comprehension of the problems involved in blindness and to realize the physical abilities of blind children.

11. Instructing an integrated physical education class tends to improve the teaching skill of the instructor by forcing her to become more accurate, decisive, alert, and resourceful in her presentation of the subject matter.

Recommendations for Further Study

Several problems have occured to the investigator while conducting this study which might be resolved through the results of further research. Therefore, it is recommended that further investigation be conducted to:

1. Develop adaptations, modifications, and teaching aids which would permit participation by an integrated class in physical education activities such as: volleyball, individual sports, stunts and tumbling, and dance activities.

2. Compare the differences in the physical, social, and emotional development of blind children enrolled in integrated public school programs and placed in integrated physical education classes, with blind children enrolled in such programs and placed in adapted physical education classes.

3. Compare the physical, social, and emotional development of blind children enrolled in public school integrated physical education programs with blind children enrolled in residential physical education programs.

4. Determine the effect of participation in physical education activities on balance, mobility, and coordination.

5. Determine the effect of participation in physical education activities on the degree of fear, confidence, and independence exhibited by the blind individual.

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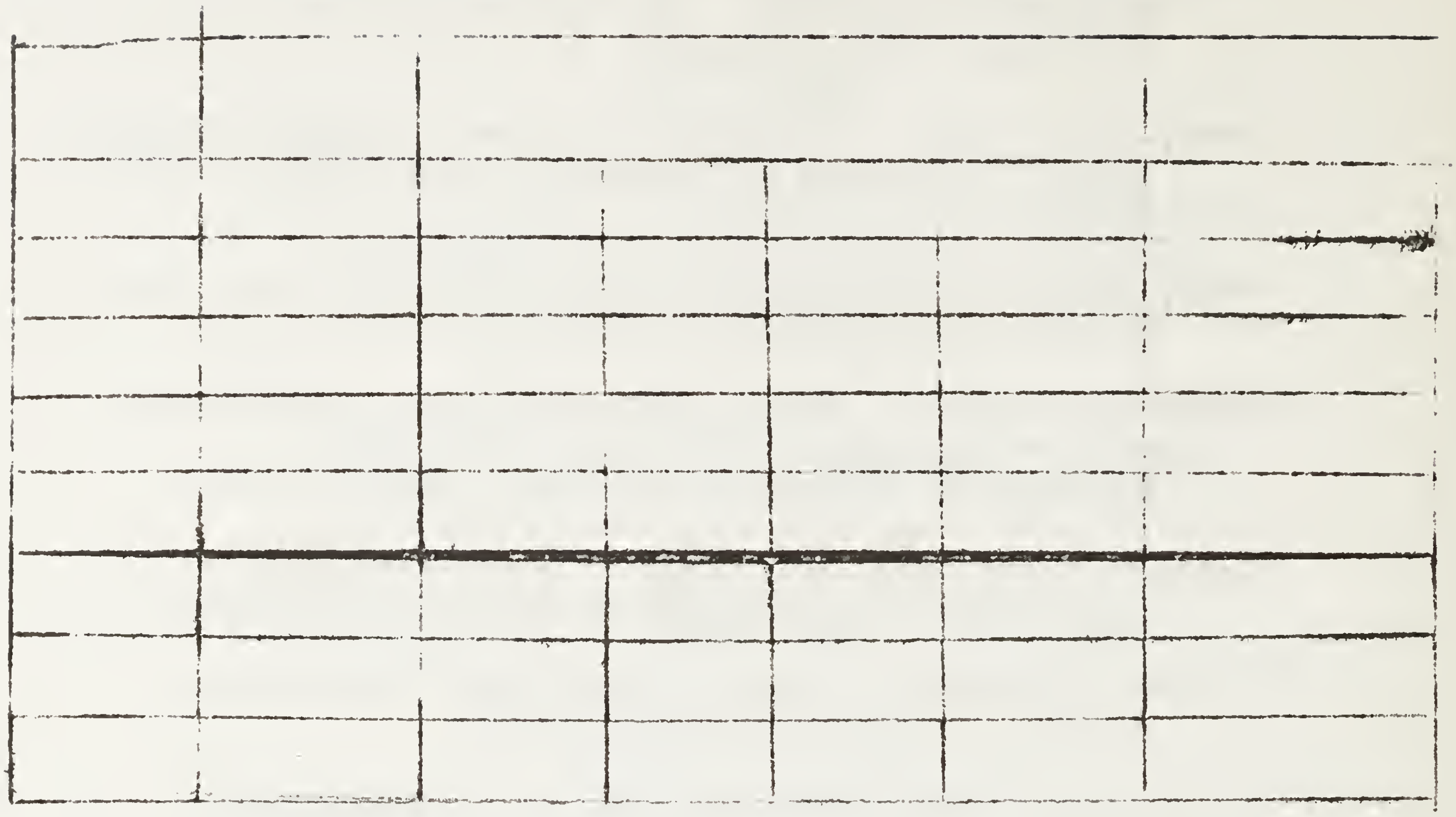
Basketball Scoreboard



Material

1' x 2½' fiber board
Thumb tacks (smooth, rough, taped)
3 small containers
Classmate s names and words on scoreboard in braille
Envelopes

Construction

1. The sections on the fiber board were marked by using a sharp instrument to indent the lines.

2. The words: fouls, names, points, running score were brailled and fastened in their proper spaces.

3. Tape was put on the heads of one-third of the tacks. One-third of the tacks were roughed with a file. One-third of the tacks were left smooth. Each type of tack was placed in a separate container.

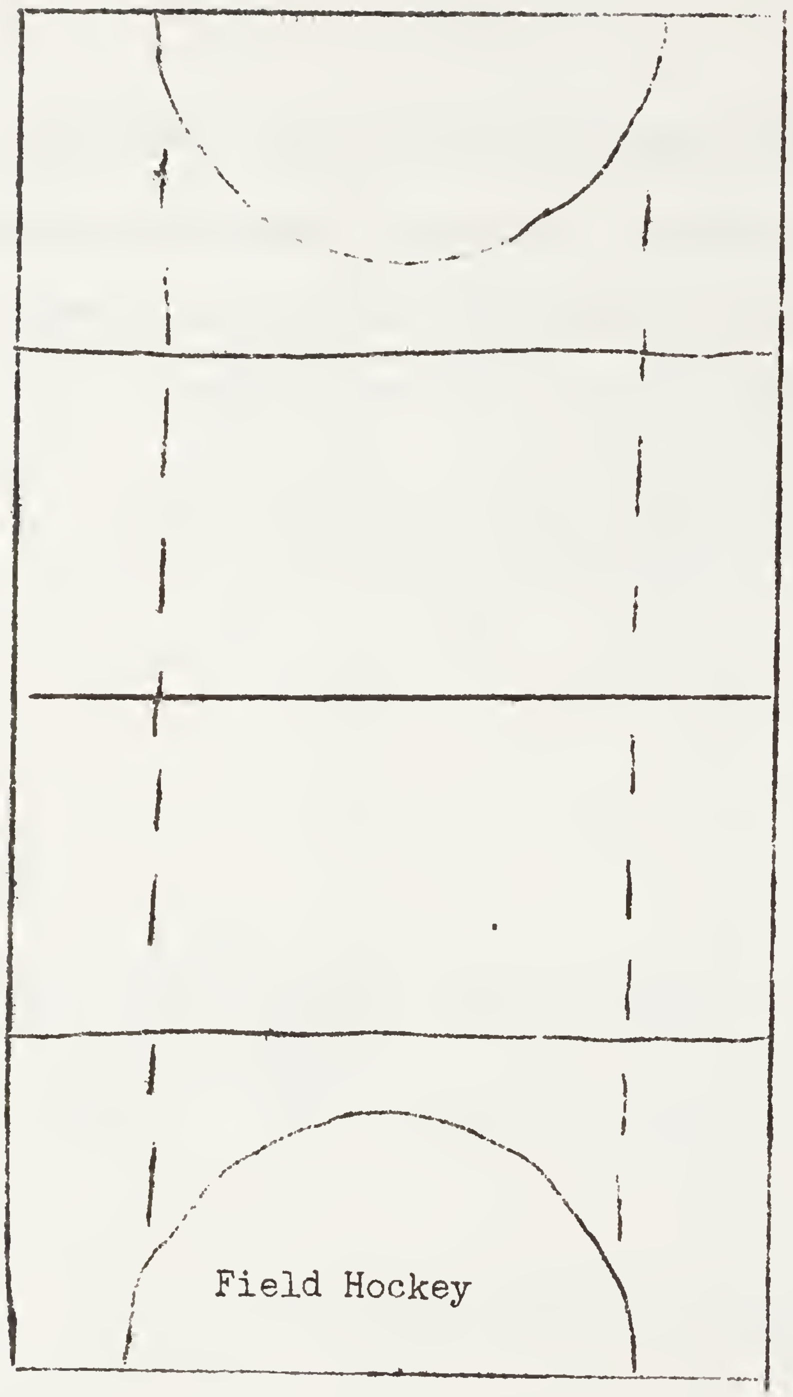
4. The names of every girl on each team were brailled and placed in separate team envelopes. The team name was brailled on the outside of the envelope

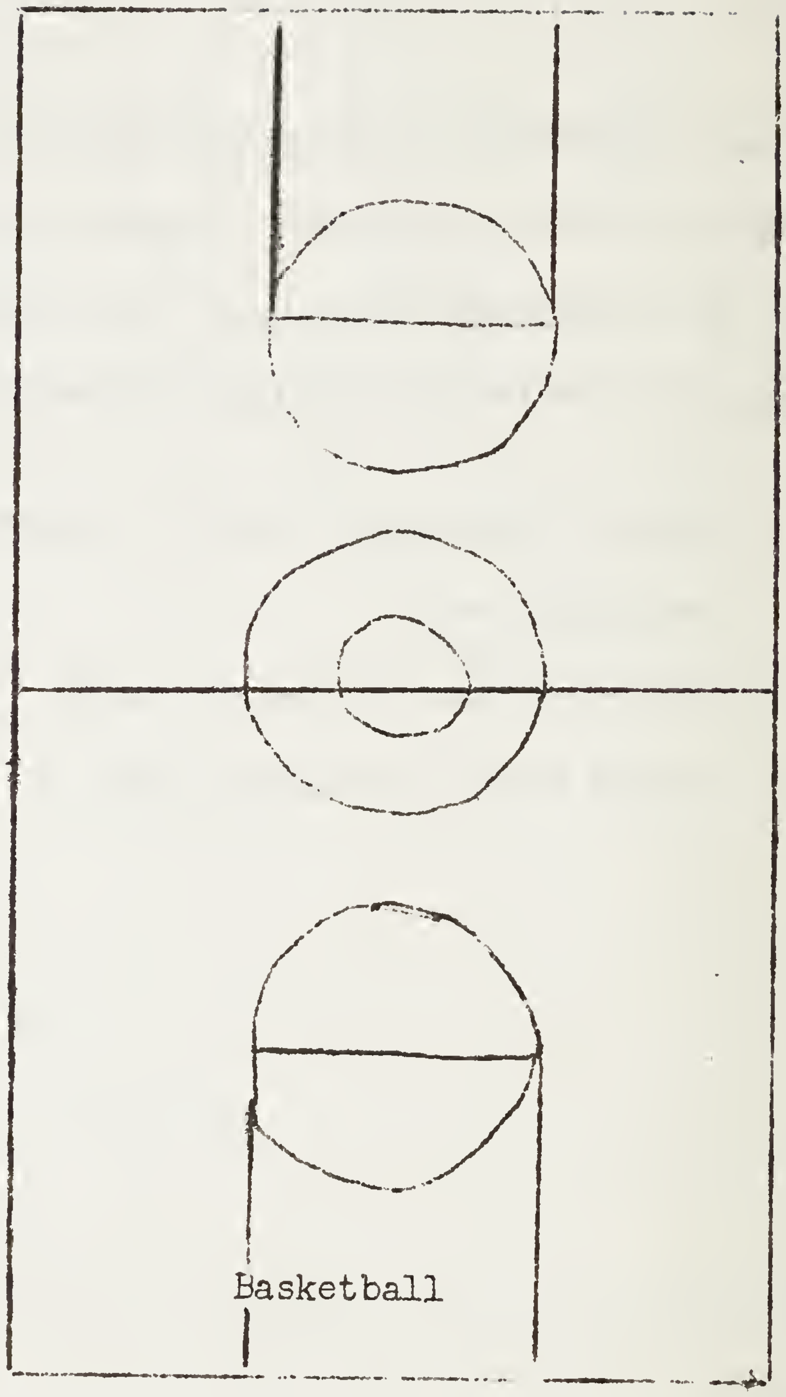
Use:

The subject sat on the floor with the scoreboard in front of her The three containers of tacks were set in front of the board. The subject placed the player s names in the appropriate column. She placed the appropriate tack in the correct column to indicate the following information:

1. Smooth tacks--one tack for each foul, field goal, and point on the running score.
2. Rough tacks--fre throws missed.
3. Taped tacks--free throws made.

Diagram Board





Material:

- 2' x 3½' fiber board
- 2--36" half round wood
- 3--24" half round wood
- 2--24" quarter round wood
- 1--40" quarter round wood
- 1--3/4" round doll rod
- 1--3/4" square rod
- Roll of acid cord solder
- Heavy staples

Construction:

1. The half round was permanently glued to the fiber board to form the boundary lines and the center line for both the hockey field and the basketball court. Grooves were filed on the end lines and the center line to indicate the goal area and the point at which the center bully is taken in field hockey.

2. The quarter round was used to mark the 25 yard lines. The 40' piece of quarter round was cut into short pieces and used to mark the allies on the hockey field. The quarter round pieces were held in place by staples and removed when the board was used for basketball.

3. The hockey striking circles, the basketball lanes, and the circles on the basketball court were formed by core solder which was very flexible and easily cut. These pieces were held in place by staples.

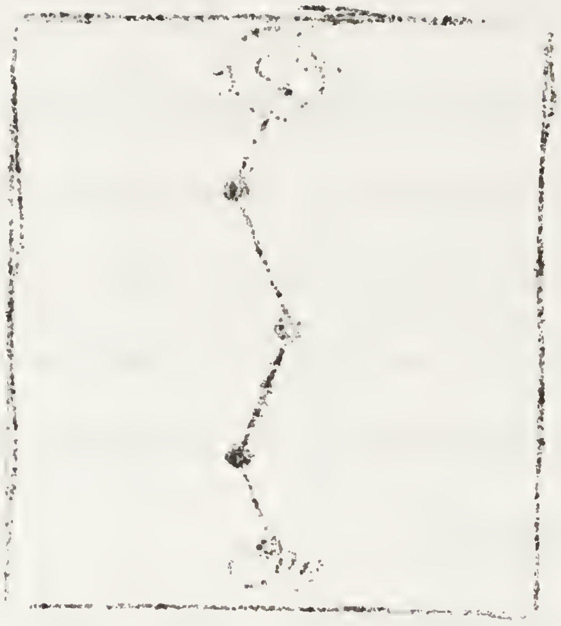
4. The 3/4" round and square rods were cut into half inch lengths. These were used to represent two teams of players. Thin nails were driven through the "players" so that they could be inserted into the fiber board.

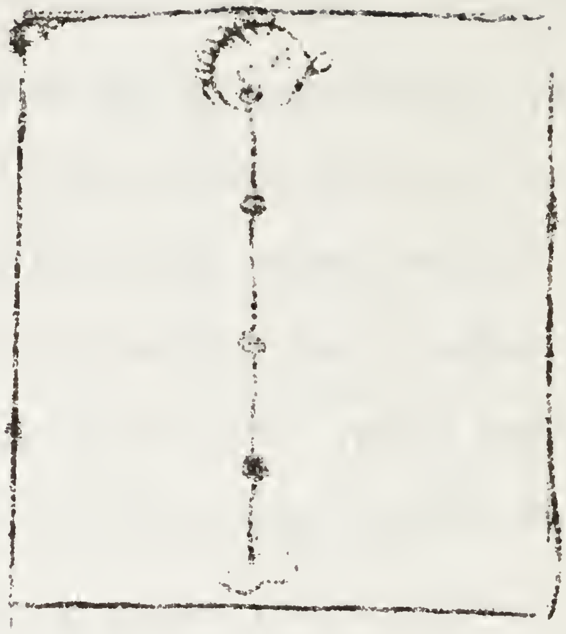
Use:

The subject observed the court and field markings and the player s positions tactually. She was able to study playing situations such as: free throws, jump balls, bullies, and corner shots.

When diagrams were used in written tests, the subject indicated her answer on the braille board as the sighted marked on their printed papers.

Rope Posture Manikin





Material

Rope approximately 30" long
Heavy string
Heavy paper
Masonite board

Construction:

1. The string was wrapped around the rope at five proportioned points to indicate the five bony landmarks of the body.

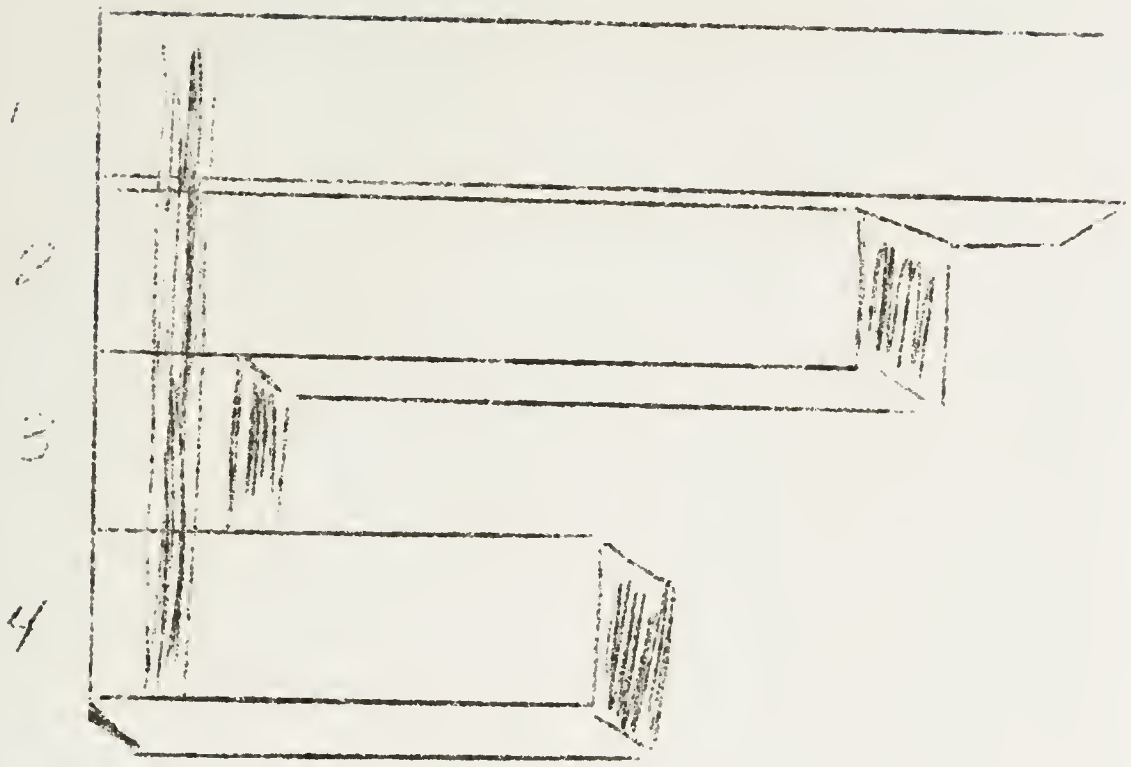
2. Paper was cut to simulate the head and shoe. These were attached to the ends of the rope.

3. The rope was glued to the board in a position of poor alighment as shown above. A second rope was made and placed in a position of good alignment as shown above.

Use:

The subject observed tactually the relative position of the bony landmarks when in good and poor alignment.

Indoor Starting Block



Material:

2 x 4 wood cut:
    1--2' 8 "
    1--6"
    2--cut to the length needed for individual s foot position
14", 1 x 2

Construction:

1. As shown in the figure above, one end of the number 2 and 4 pieces of wood were cut at a 45 degree angle.

2. The four pieces of wood were assembled as shown above and held together by nailing the 14" piece of wood across the top.

Use:

The number 1 piece of wood was cut to the length of an official block. The subject used this piece to determine how far she was from the starting line. The number 3 piece spaced number 2 and 4. The block was pushed against the wall.

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